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13. (Amended) A method for identifying a polypeptide, comprising:

(a) simultaneously determining the mass of a subset of parent polypeptides from a population of polypeptides and the mass of fragments of said subset of parent polypeptides, wherein said fragment mass is determined by mass spectrometry in the absence of ion selection for producing fragment ions;

(b) comparing said determined masses to an annotated polypeptide index;

(c) identifying one or more polypeptides of said annotated polypeptide index having said determined masses; and

B1 (d) quantitating the amount of said identified polypeptide in a sample containing said polypeptide.

B2 23. (Amended) The method of claim 13, wherein said characteristics are selected from the group consisting of polypeptide mass, amino acid composition, isoelectric point (pI), and elution on a chromatographic medium.

B3 36. (Amended) The method of claim 24, wherein said characteristics are selected from the group consisting of polypeptide mass, amino acid composition, isoelectric point (pI), and elution on a chromatographic medium.

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47. (Amended) The method of claim 37, wherein said characteristics are selected from the group consisting of polypeptide mass, amino acid composition, isoelectric point (pI), and elution on a chromatographic medium.

Please add the following new claims.

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48. (New) The method of claim 23, wherein said characteristic is polypeptide mass.

49. (New) The method of claim 23, wherein said characteristic is amino acid composition.

50. (New) The method of claim 23, wherein said characteristic is pI.

51. (New) The method of claim 23, wherein said characteristic is elution on a chromatographic medium.

52. (New) The method of claim 36, wherein said characteristic is polypeptide mass.

53. (New) The method of claim 36, wherein said characteristic is amino acid composition.

54. (New) The method of claim 36, wherein said characteristic is pI.

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55. (New) The method of claim 36, wherein said characteristic is elution on a chromatographic medium.

56. (New) A method for identifying a polypeptide, comprising:

(a) simultaneously determining the mass of a subset of parent polypeptides from a population of polypeptides and the mass of fragments of said subset of parent polypeptides, wherein said fragment mass is determined by mass spectrometry in the absence of ion selection for producing fragment ions;

(b) comparing said determined masses to a annotated polypeptide index; and

(c) ~~identifying one or more polypeptides of said~~
annotated polypeptide index having said determined masses.

57. (New) The method of claim 56, further comprising:

(d) determining one or more additional characteristics associated with one or more of said parent polypeptides;

(e) comparing said characteristics determined in step (a) and step (d) to said annotated polypeptide index; and

(f) optionally repeating steps (d) and (e) one or more times, wherein a set of characteristics is determined that

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identifies a parent polypeptide as a single polypeptide in said annotated polypeptide index.

58. (New) The method of claim 56, further comprising quantitating the amount of said identified polypeptide in a sample containing said polypeptide.

59. (New) The method of claim 57, wherein a set of characteristics is determined that identifies two or more parent polypeptides as single polypeptides in said annotated polypeptide index.

60. (New) The method of claim 59, wherein a set of characteristics is determined that identifies each of said parent polypeptides in said subset of parent polypeptides.

61. (New) The method of claim 56, wherein the mass of said parent polypeptides and fragments is determined at an accuracy in ppm of greater than 1 ppm.

62. (New) The method of claim 56, wherein the mass of said parent polypeptides and fragments is determined at an accuracy in ppm of 2.5 ppm or greater ppm.

63. (New) The method of claim 56, wherein the mass of said parent polypeptides and fragments is determined at an accuracy in ppm of 5 ppm or greater ppm.

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64. (New) The method of claim 56, wherein the mass of said parent polypeptides and fragments is determined at an accuracy in ppm of 10 ppm or greater ppm.

65. (New) The method of claim 56, wherein the mass of said parent polypeptides and fragments is determined at an accuracy in ppm of 100 ppm or greater ppm.

66. (New) The method of claim 57, wherein said characteristics are selected from the group consisting of polypeptide mass, amino acid composition, pI, and elution on a chromatographic medium.

67. (New) The method of claim 66, wherein said characteristic is polypeptide mass.

68. (New) The method of claim 66, wherein said characteristic is amino acid composition.

69. (New) The method of claim 66, wherein said characteristic is pI.

70. (New) The method of claim 66, wherein said characteristic is elution on a chromatographic medium.

REMARKS

Claims 1-47 are pending. Claims 6 and 17 have been canceled. New claims 48-70 have been added. Claims 12, 13, 23,